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ABSTRACT

Eight Canadian and U.S. universities that have combined several information services under one administrator were studied. These services include the library and one or more other information handling functions such as audiovisual services, technical aids to instruction, computing services, telecommunications, bookstore, artistic properties, university press, and printing services. The main objective was to determine to what extent new organizational models exist, the configuration of these models, and whether there is any trend or pattern developing. Rationales for such combined services are discussed, along with the benefits and problems of multiple information services and the characteristics of their administrators. (Author/LS)

ADMINISTRATIVE INTEGRATION OF INFORMATION RESOURCES AND SERVICES IN UNIVERSITIES IN CANADA AND THE UNITED STATES

A REPORT TO
THE COUNCIL ON LIBRARY RESOURCES

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by

Helen A. Howard

September 1974

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PURPOSE

The purpose of this project was to study several Canadian and American universities which have brought together under a senior administrator as his sole line responsibility the library and one or more other information handling functions such as audio-visual services, technical aids to instruction, computing services, telecommunications, bookstore, artistic properties, university press, and printing services. The main objective was to determine to what extent new organizational models exist, the configuration of these models, and whether there is any trend or pattern developing.

It was hoped that such a study would also provide insight into the rationale for the administrative integration of some or all of a university's information resources and services; the benefits expected and what the results have actually been; problems encountered in implementing a new structure; the degree to which the functions and services of the information units have been affected; the role of advisory and policy committees; and the effects on such matters as planning, decision making, budgeting, staffing, and formal and informal communications.

SCOPE

No attempt was made to carry out an exhaustive survey of Canadian and American universities which have, either because of their original structure or as a result of reorganization, integrated administratively at a senior level some or all of their information resources and services. Through the literature, personal communications, and a meeting with the Director of the Office of University Library Management Studies of the Association of Research Libraries some twenty universities were identified which seemed to fit some variation of the "information package" model. Further investigation eliminated several of these because of the fact that although a senior administrator is responsible for several information handling services, he is also responsible for such diverse functions as physical plant, health services, admissions, and/or counselling.

Eight universities were selected for detailed study and site visits: University of Calgary, Columbia University, Dalhousie University, University of Pittsburgh, Purdue University, Université du Québec, Simon Fraser University, and the University of Toronto. The basis for selection was largely subjective but an attempt was made to include both new and older institutions. It happens that there are relatively more examples in Canada of the administrative integration of information services than in the United States. The eight universities were visited and some 60 individuals interviewed during the period June through August 1974. Appendix A lists the institutions and provides details about their respective organizational patterns for information services.

METHODOLOGY

Literature Search

A search of the literature covering a broad range of topics including educational administration, higher education, organizations, library administration, administration of audio-visual services, and administration of computer centers produced nothing specific to the topic of this project. Passing allusions and tangential remarks were the most that were uncovered. However, a number of items have provided useful background and these are recorded in a selective bibliography in Appendix B.

Site Visits and Interviews

Through the chief librarian's office a request was made to schedule interviews at each of the eight universities with the administrator responsible for the information services under study, the heads of the units reporting to him, the administrator he reports to, and some faculty members of appropriate policy or advisory committees. Because the interviews were conducted during a vacation period, few faculty were available and a couple of computing center directors were unfortunately unavailable.

Without exception this investigator was warmly received and the interviewees talked freely about the university's administrative structure, its information resources and services, and his or her views on the subject. No attempt was made to follow a precise interview schedule. Rather a list of basic questions was used as a guide and they were raised at what seemed to be the appropriate time.

At each university visited documentation such as planning documents, annual reports, position papers, committee minutes, and organization charts were examined. The amount of documentation available at any one institution ranged from a few pages to a depth of more than a foot covering several years and different phases of development.

TERMINOLOGY

A wide range of terminology relating to information and communications was encountered in this study. In order to avoid the cumbersome phrase "information and communications resources and services" the word "information" will be used in this report. It should be interpreted to have a broad meaning and to include, when appropriate to the context, the concept of communication.

BACKGROUND

There seems to be general agreement that organizationally a university is one of the most complex structures in modern society. Also there is considerable body of opinion that existing structures are increasingly archaic and ill-equipped to cope successfully with modern pressures and rapid change.

Today's large universities are struggling with a multitude of problems such as the overwhelming amount of information available in a multiplicity of forms; technological innovations especially in the field of communications and computers; new and widely varying needs of students representing a wide spectrum in age, background, and motivation. At the

same time there are skyrocketing costs and a growing clamor from governments and citizens for more effective use of resources and greater accountability for how they are used.

Until the 1950's the directors of university libraries usually reported directly to the president. As universities grew in size and complexity it has become common practice to spread the administrative load by creating several vice-presidential positions. It has also become common practice for the director of libraries to report to one of them, usually the vice-president for academic affairs. As new functions such as computing services, language laboratories, and audio-visual services developed, they tended to be appended to the portfolios of existing vice-presidents, or attached to a particular faculty or school. As a result, information services often have become functionally and administratively scattered. Duplication of equipment, staff, materials, and services is not uncommon; access to particular resources and services may be uncertain; and centralized information on resources and services is often lacking.

In the last five years a considerable body of literature on universities has been produced but Perkins indicates that the lack of any overall organizational doctrine to embrace the university's functions has seriously weakened its organizational spine and that "administrative inventions" to remedy the problem are still in their infancy.[1] Nevertheless Bolton predicts a "reorganizational hurricane" in universities in the seventies and exhorts university librarians to plan the role they feel they ought to fulfill in a restructured university and to work toward achievement of that goal.[2]

In its report, To Improve Learning, the Commission on Instructional Technology drew attention to "media apartheid." In its view, "professional associations and the organization of schools and colleges (for example, the separation of the library, the audio-visual center, the television stations, and the computer facility from one another - even though all of them should be collaborating on instructional programming) have encouraged this separation."[3]

Some administrative inventions relating to information resources and services are found in some of the universities founded during the 1960's. For example, the Université du Québec created the position of Vice-President for Communications with the responsibility for library, computing, audio-visual, and telecommunications services; Florida Atlantic University at Boca Raton put a Director of Learning Resources in charge of the library, television and radio, learning laboratories, graphics, and technical facilities; at Federal City College in Washington, D.C. the Director of the Media Center was responsible for library services for print and non-print resources, for the bookstore (media store), a media communications program, and the college press; at Simon Fraser University in Burnaby, British Columbia, the University Librarian became responsible for the library, the audio-visual center, and the bookstore. However, the grouping of information services at the three last-named universities has not endured. At Florida Atlantic and Simon Fraser Universities respectively "learning resources: and "audio-visual" services have separated from the library. At Federal City College responsibility for the bookstore has been shifted.

More recently there have been some examples of university reorganization which groups administratively several information resources and services. In their study of the Columbia University libraries Booz, Allen and

Hamilton recommended that the senior library executive have the title Vice-President and University Librarian.[4] In fact, the position of Vice-President for Information Services and University Librarian was created and the incumbent University Librarian was appointed to fill the new position. He is responsible for university libraries, computer center, educational technology, language laboratories, artistic properties, and oral history. At the University of Pittsburgh the Office of Communications Services was established with its Director responsible for libraries (including media center), Academic Computing Center, the Knowledge Availability Systems Center, the Campus-Based Information System, and the Interdisciplinary Program in Information Science. At Miami University, Oxford, Ohio, the Associate Provost was made responsible for the library system, telecommunications, summer school and continuing education programs, all honors and interdisciplinary studies programs, registrar's office, gerontology center, and the Scripp's Foundation for Research in Population Studies. The University of Wisconsin, Whitewater, has just created the position of Executive Director of Learning Resources with responsibility for library, audio-visual services, educational materials center, area research center, and instructional development. At the University of Houston a proposal to integrate administratively the library (including audio-visual services), the computing center, admissions, and the office of research has been put forward but is in abeyance.

In Canada there are also several instances of university reorganization involving information functions. At Dalhousie University, Halifax, the

position of Director of Communications was established with responsibility for library, audio-visual services, computing, university press, and management information systems. The University of Calgary created a Division of Information Services with its Director responsible for library, computing, and communications media. The University of Toronto has adopted a unicameral system of governance which has brought into being a host of new policy and advisory committees and resulted in the reapportioning of administrative responsibilities. At the present time the Vice-Provost has responsibility for libraries, the academic computing center, the instructional media center, the information systems department, and the office of statistics and records. At Sir George Williams University in Montreal a task force established to make recommendations regarding the future of the Center for Instructional Technology recommended that the position of Vice-Principal for Information Resources be created but the recommendation has not been implemented. The University of Ottawa is undergoing reorganization which includes the administrative integration of information services. The University of Saskatchewan, Regina, established the position of Director of Academic Services with responsibility for library, computer center, and audio and television services. However, when the incumbent left, the position had to lapse because of budget constraints.

This administrative grouping of information services is not new in higher education since many colleges have this type of organizational structure. However, it is relatively new in universities.

RATIONALE FOR GROUPING INFORMATION SERVICES

The rationale for grouping information services administratively to create an information package includes practical and conceptual elements. The most frequently stated practical consideration is the need to lighten the administrative load of the academic vice-president or his equivalent. With ever increasing complexities and problems to deal with in a large institution, it is unrealistic to expect one person to be able to cope with heavy academic responsibilities, to be sufficiently informed about the rapidly changing technology in the fields of information and communications, and to have any time to devote to coordinating information resources and services.

One faculty member pointed out that there is a dichotomy in the role of many academic vice-presidents since they have both deans and the heads of operating units such as the library, audio-visual and computer centers reporting to them. Some interviewees felt that when sufficient guidance and coordination were not available from the academic vice-president, there is a danger that the information units become self-serving rather than seeking out and responding to academic needs. Administrative integration can be viewed as a means to help ensure that the component bodies will, in a coherent way, serve the academic development of the university.

The majority of the individuals interviewed subscribed to the view that there is a philosophical and logical argument for grouping information

services and that this is based on underlying similarities. These include: being involved in handling large amounts of information; having a university-wide service function; and having an increasing degree of interdependence in the cycle of acquiring, processing, and making available information resources. One administrator stated that he did not think the commonality of information handling was sufficient in itself to bring about voluntary close cooperation among, for example, library, audio-visual, and computing since there is so much "folklore" associated with each. It is his view that the units need to be pushed together administratively in order to bring about closer cooperation.

Administrators in one of the newer universities stressed the necessity of the systems approach and that more than sharing or supplementing of resources is involved. The planning for that institution included the administrative grouping of information services with the expectation that this structure would contribute to effectiveness and efficiency in service, provide increased opportunities for interaction, and produce a more dynamic operation.

Regardless of whatever is the stated rationale for administrative integration, the underlying one is to make more effective use of available resources. Some administrators also harbor the hope of raising the level of services.

The budgets of university libraries and computing centers are usually the largest among non-teaching departments. Veaner in a recent study

of university computer centers and libraries contends that a natural linkage exists between the two and that a furtherance of this linkage may do much to reduce the potentially destructive competition which can characterize the relationship between the two units.[5] There is growing concern that libraries and computing centers visibly and actively contribute to the university's goals. The information handling functions are themselves becoming more complex and encountering serious problems such as large capital investments, demands for more or different service capabilities, conflicting priorities, appropriate levels of service, and charge-back policies.

Perhaps the rationale for integrating information services can be summarized best by quoting from a University of Pittsburgh statement:

> The rationale of bringing these activities together into one office relate, conceptually to a common function: information processing and dissemination; a common objective: resource sharing; and a common issue needing resolution: centralization versus decentralization of facilities and services.[6]

BENEFITS

In general the interviewees believed that benefits have accrued from the administrative integration of information services. In several cases, however, experience has been of short duration and the expectation is that several more years will be necessary before marked changes occur.

There was general agreement that administrative integration leads to

more interaction among the information units. However, the degree of interaction varies considerably and a great deal depends on how active the information services administrator is in the role of coordinator. Staff tend to become better acquainted with their counterparts in the other information units and this increases understanding of each other's role and operations. Basically there is a broadening of attitudes and outlook which gradually begins to transcend departmental boundaries and the potential for conflict diminishes.

It is difficult to assess the incidents and undertakings cited as tangible benefits and to determine just how much influence the organizational structure exerted and how much would have occurred in any case. Examples of tangible benefits include: a greater receptivity by staff to the systems approach; the assuming by a library acquisitions department of the responsibility for ordering non-print as well as print materials; the cataloging of non-print materials by media staff but in accordance with library cataloging practice; the cataloging by library staff of films housed in the media center; the implementation of computerized library services at an increased rate; the provision of information retrieval services by library staff from magnetic data bases; the development of "one-stop" reference service from a variety of information resources; the recording of bibliographic information on audio-visual resources in the main catalog or in a book catalog placed nearby; better control

of inventory in the university bookstore as a result of being informed about the number of copies of heavily used titles on reserve in the library; a system-wide, computer-based shared cataloguing and information retrieval system. At one institution clearly identifiable savings were realized by eliminating the library's stand-alone computer in favor of remote job entry to the university computing center.

One senior administrator thought that if the units had remained separate they would not have recognized to the same extent the opportunities to move toward achieving service objectives. Another felt that to the degree there is integration of internal management there is created the ability to engage in networking without "the atrocious costs" in time and effort needed for negotiations with individual units, i.e. libraries, audio-visual, and computing facilities. This same person holds the opinion that the only way to survive in the face of the overwhelming output of information is to have integrated management of information services within the university and to be engaged in networking outside.

Several interviewees mentioned that better communications have developed since reorganization and that discussions of problems can now take place informally as well as formally. Other benefits referred to include a reduced span of control; greater access to the administrator responsible for information services; cross-fertilization among departments; synergistic and multiplier effects; and a deeper insight into the whole area of information resources and services.

A specific problem which may benefit from better decisions arising

from the administrative integration of information services is that of magnetic data bases. There are questions about whether they should be acquired, what funds should be used for their purchase, and whether members of the academic community should be charged for using them. In the universities visited the administrative linking of the computing center and library seems to be fostering the working out of acceptable solutions. In at least two instances librarians are involved in interfacing with data bases located in the computing center. The problem regarding the purchasing of the data bases is likely to increase as more become available. One view is that library materials funds should be used and that there is no more logical reason to charge for data base services than for using hard copy or non-print materials. An opposing view is that the "book" budget should not be eroded by using it to purchase magnetic data bases, other sources of funds should be found if the data bases are in fact to be acquired, and that users should be charged for their searches.

PROBLEMS

It is the view of this investigator that at this time most of the information units which are integrated administratively are only beginning to achieve some degree of functional integration. Taylor foresaw the difficulty in achieving functional integration and wrote: "Mere grouping of these seemingly disparate activities, however, will not alleviate the problems of each. What is necessary, and what these pages are all about, is the complete amalgamation of function."[7] He went

on to state

> ....the first step in a realistic transition is to broaden the communications base by combining the library with other activities which have basically the same mission. Merely combining these activities as we have done at Hampshire College, however, will help neither the financial nor educational problems because each activity retains its autonomy and separate mission; but there should occur over time a gradual blurring of the divisions. It may take 5 to 10 years to reach the point where it can be said that a new institution is emerging where there is a coalescing of these semi-autonomous units into a different functional framework.[8]

A prevalent problem is that of the structure and use of policy, user, and advisory committees. It has been common practice to establish an advisory committee along with the position of vice-president or director of information services. However, there is usually also a senate and/or user committee advising on matters relating to the library, audio-visual center, and computing center respectively. In some cases the composition and roles of the committees are unclear in relation to each other and inaction or action at cross purposes has resulted. The practice of having the administrative head of information services chair the committee advising him may also cause some problems. Optimism was expressed regarding the likelihood of being able to devise improved mechanisms providing sufficient representation from the academic community without increasing red tape.

A problem which is considered serious by several library administrators is the level in the university hierarchy of the administrator to whom they report. In the cases where another reporting level has been

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interposed below that of vice-president, library staff tend to see this as a downgrading of the library and some facultyhave the same perspective. Chief librarians feel strongly about the desirability of having direct access at the vice-presidential level for budget presentation, discussion of service policies, etc. The computer center directors interviewed did not raise the issue of reporting level. The views of the directors of audio-visual services varied depending upon whether their functions are an integral part of the university library or stand separately. In the former instance some preference to be administratively separate was expressed as was a desire to fight their own budget and other battles. In the cases where audio-visual services comprise a separate unit, the directors seem content with existing reporting relationships. One audio-visual director did indicate, however, that it was desirable to report to a level higher than that of the deans in order to facilitate equal decisions on a university-wide basis and the settlement of disputes.

Most chief librarians stressed their need to have access to their university's highest academic and planning bodies. They wish to be able to speak directly on matters affecting library services, budgets, staffing, and to have early access to information such as plans for new academic programs.

A separate problem affecting audio-visual units and which is not necessarily connected with any particular administrative arrangement

was raised several times. This is the question of priorities in their service programs and the extent to which they will or will not engage in film and television production. In a time of budget constraints faculty at some of the institutions visited were pressing for reduction in or elemination of such production undertakings.

One alleged advantage for administratively integrating information services is that destructive competition for scarce resources will be avoided and that effective use of what is available will be ensured. However, one case was encountered where a university budget committee refused to accept the budget breakdown as presented for the library, media center, and computer center. They insisted that the book budget be increased; as a result both media center and computing center budgets had to be cut.

The establishment of a new administrative position for information services may be a problem in at least two ways: it can be viewed by faculty and staff just as an increase in bureaucracy and the power of the administration; the direct costs are high. Also some individuals commented on the danger that a grouping of information services as an information package could result in weakening ties with academic decision making bodies. They stressed the need for taking measures to ensure strong and continuing liaison, representation, and information flow. There was agreement that the administrator responsible for information services needs to be accepted as a member

of the university's senior executive and to be fully informed about and involved in academic planning and decision making.

ADMINISTRATOR OF INFORMATION SERVICES

The position of administrator of information services at whatever level and title, is a demanding one. One interviewee called it "man-consuming"; another thought it was attractive conceptually but that the politics are "horrendous".

A few ventured to identify desirable qualities in such an administrator. These include: having a service orientation, creative tact, and the ability to keep credibility high; being able to relate well with faculty, and being an astute politician. More than one individual stressed the need for flexibility and latitude in developing a role. In the same vein one administrator warned against being too "tidy-minded" on paper since this diminishes the latitude to cope with an evolving, dynamic situation. In general it seems that an entreprenurial approach is a required basic characteristic.

The view was expressed that the administrative grouping of information functions in itself does not create an impact; rather the impact depends upon the people involved, and especially the senior administrator. This person has a big responsibility for creating and maintaining effective communications since so much information of potential value to his unit heads is likely to be filtered through him.

CONCLUSIONS

This study has shown that a number of Canadian and American universities have introduced, mainly within the last five years, new organizational models for administering their information services. These vary considerably in the number of functions encompassed, the degree of integration, and in reporting relationships.

There are several underlying similarities in the information functions which are grouped and this provides a philosophical and conceptual base for their administrative integration. There are also strong practical reasons and local conditions and attitudes determine what is appropriate and acceptable. It is clear that there are no pat answers for fitting together a university's internal components. Peter Drucker's statements that "organization design is a series of risk-taking decisions rather than a search for the 'one best way'"[9] is very apt.

If information units are functioning well with high level service in line with university objectives, and with good communications and public relations, then the organizational structure seems secondary. If there are serious difficulties, reorganization may help but it may not get at the cause of the problems. In any event, the people involved are the most important single element affecting outcomes.

The administrative integration of a university's information services may be looked upon as a cornerstone for interaction. It may be an

effective first step to reduce potentially destructive competition among information units for scarce resources and at the same time bring about a coalescing effort to meet better a university's information and communications needs. However, the longer term implications are not yet clear and it is too soon to say whether or not a trend is developing.

REFERENCES

1. James A. Perkins, ed., The University as an Organization (New York: McGraw-Hill, 1973), p. 10.

2. Earl C. Bolton, "Response of University Library Management to Changing Modes of University Governance and Control," College and University Libraries, 33 (July, 1972), 309.

3. Sidney G. Tickton, ed., To Improve Learning - an Evaluation of Instructional Technology (New York: R. R. Bowker Company, 1971), vol. 1, p. 48.

4. Booz, Allen and Hamilton, Inc., The Organization and Staffing of the Libraries of Columbia University: a Case Study (Westport, Conn.: Redgrave Information Resources Corp., 1973), p. 45.

5. Allen B. Veaner, "Institutional Political and Fiscal Factors in the Development of Library Automation, 1967-71," Journal of Library Automation, 7 (March, 1974), 20.

6. University of Pittsburgh. Office of Communications Programs. Office of Communications Programs (Pittsburgh: n.d.), p. 1.

7. Robert S. Taylor, The Making of a Library: the Academic Library in Transition (New York: Becker and Hayes, 1972), p. 224.

8. Ibid, p. 226.

9. Peter Drucker, "New Template for Today's Organizations," Harvard Business Review, 52 (January-February, 1974), 51.

ADMINISTRATION OF INFORMATION AND COMMUNICATIONS SERVICES

UNIVERSITY	OFFICER IN CHARGE	REPORTS TO	RESPONSIBLE FOR
Calgary	Director, Division of Information Services*	Vice-President, Academic	Library Communications Media Computer Center
Columbia	Vice-President for Information Services and University Librarian	Executive Vice-President for Academic Affairs and Provost	Library Computer Center Educational Technology Language Laboratories Artistic Properties Oral History
Dalhousie	Director of Communications	President	Library Audio Visual Computer Center Printing University Press Management Information Systems
Pittsburgh	Director, Office of Communications Programs	Provost	Library (including Media Center) Academic Computer Center Knowledge Availability Systems Center Campus-based Information System Interdisciplinary Program in Information Science

Purdue	Director of Libraries	Provost	Library Audio-Visual Instructional Media Research Unit
Université du Québec	Vice-President, Communications	President	Library Audio-Visual Computer Center Telecommunications
Simon Fraser	University Librarian	Assistant Vice-President, Academic	Library Bookstore (until 1973 also audio-visual)
Toronto	Vice-Provost	Provost	Library Academic Computer Center Instructional Media Center Information Systems Dept. Office of Statistics and Records

*On September 12, 1974 the General Faculties Council voted to dismantle the Division of Information Services and that, initially, the heads of the three operating units report directly to the Vice-President, Academic.

SELECTED BIBLIOGRAPHY

Bolton, Earl C. "Response of University Library Management to Changing Modes of University Governance and Control." College and Research Libraries, 33 (July 1972), 305-311.

Booz, Allen and Hamilton, Inc. Organization and Staffing of the Libraries of Columbia University: a Case Study. Westport, Conn.: Redgmve Information Resources Corp., 1973.

Brown, James W., Norbert, Kenneth., and Srygley, Sara A. Administering Educational Media: Instructional Technology and Library Services. 2nd ed. New York: McGraw-Hill, 1972.

Carnegie Commission on Higher Education. The Fourth Revolution: Instructional Technology in Higher Education. New York: McGraw-Hill, 1972.

Hamelman, Paul W. Managing the University: a Systems Approach. New York: Praeger, 1972.

Knowles, Asa S., ed. Handbook of College and University Administration. New York: McGraw-Hill, 1970.

McAnally, Arthur M. and Downs, Robert B. "The Changing Role of Directors of University Libraries." College and University Libraries, 34 (March 1973), 103-125.

Moses, David F., "A Successful Mix of Libraries and Media." Drexel Library Quarterly, 7 (April 1971), 107-120.

Mosman, Charles. Academic Computers in Service. San Francisco: Josey-Bass, 1973.

Perkins, James A. The University as an Organization. New York: McGraw-Hill, 1973.

Ralston, Anthony. "The Library Lobby." College and Research Libraries, 32 (Nov. 1971), 427-431.

Rogers, Rutherford and Weber, David C. University Library Administration. New York: H. W. Wilson Company, 1971.

Stone, C. Walter. "Educational Communication and Information Services." Educational Media Yearbook, 1973. Edited by James W. Brown. New York: R. R. Bowker Company, 1973.

Taylor, Robert S. The Making of a Library; the Academic Library in Transition. New York: Becker and Hayes, 1972.

Tickton, Sidney G., ed. To Improve Learning - an Evaluation of Instructional Technology. New York: Bowker, 1971.

Veaner, Allen B. "Institutional Political and Fiscal Factors in the Development of Library Automation, 1967-71." Journal of Library Automation, 7 (March 1974), 5-26.